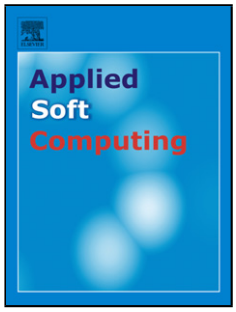

Title: Farmland Fertility: A New Metaheuristic Algorithm for Solving Continuous Optimization Problems

Authors: Human Shayanfar, Farhad Soleimanian Gharehchopogh

PII: S1568-4946(18)30421-6
DOI: https://doi.org/10.1016/j.asoc.2018.07.033
Reference: ASOC 5001

To appear in: *Applied Soft Computing*

Received date: 17-10-2017
Revised date: 24-4-2018
Accepted date: 14-7-2018

Please cite this article as: Shayanfar H, Gharehchopogh FS, Farmland Fertility: A New Metaheuristic Algorithm for Solving Continuous Optimization Problems, *Applied Soft Computing Journal* (2018), https://doi.org/10.1016/j.asoc.2018.07.033

Farmland Fertility: A New Metaheuristic Algorithm for Solving Continuous Optimization Problems

Human Shayanfar[1], Farhad Soleimanian Gharehchopogh[2,*]

Department of Computer Engineering, Urmia Branch, Islamic Azad University, Urmia, Iran[1,2]

Corresponding Author * {bonab.farhad@gmail.com}

Highlights

- In this paper, a new metaheuristic algorithm that is inspired by farmland fertility in nature is presented.
- The farmland fertility with smaller dimensions problems has been able to act as a strong metaheuristic algorithm and it has optimized problems nicely.
- The proposed metaheuristic algorithm is evaluated by using large number of mathematical problem of standard benchmark .
- we compared it with other powerful metaheuristic algorithms such as: ABC, FA, HS, PSO, DA, BA and improved PSO.
- The proposed metaheuristic algorithm is very simple and very flexible than other available metaheuristic algorithms.

Abstract:

Nowadays, the use of metaheuristic algorithms has dramatically increased in order to achieve the optimal solution in solving continuous optimization problems. In this paper, a new metaheuristic algorithm that is inspired by farmland fertility in nature is presented; this algorithm divides into several parts of the farmland, and to optimize solutions of each section with optimal efficiency of two types in internal and external memory. In order to evaluate the farmland fertility, we simulated it on 20 main function of mathematical optimization that is important to evaluate this type of algorithms and the results displayed. This farmland fertility has been compared with other metaheuristic algorithms such as; artificial bee colony (ABC), firefly algorithm (FA), harmony search (HS), particle swarm optimization (PSO), differential evolution (DE), bat algorithm (BA), and improved PSO and the results are displayed clearly. Simulations show that the farmland fertility often acts better than other metaheuristic algorithms. The farmland fertility in problems with smaller dimensions problems has been able to act as a strong metaheuristic algorithm and it has optimized problems nicely. Furthermore, the